



Upgrading California's Electric Transmission System: Issues and Actions for 2005 and Beyond

Prepared in Support of the 2005 Integrated
Energy Policy Report Proceeding

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Topics covered

- Report Overview
- Summary of Policy Options
- Next Steps
 - Staff Report
 - Strategic Plan (PRC section 25324)
 - *Energy Report*



Chapter 1: Introduction

- Sets the stage for this year's work based on 2003 and 2004 Update
- Notes progress made in implementing 2003 and 2004 Update recommendations
- Notes other significant transmission developments since the *2004 Energy Report Update* was published in December 2004



Chapter 2: California's Transmission Policy Status

- Collaborative Long-term Transmission Planning
- Criteria for Evaluation of Transmission and Alternative Sources
- Improved Assessment of Transmission Costs and Benefits
- Coordination Among Western States

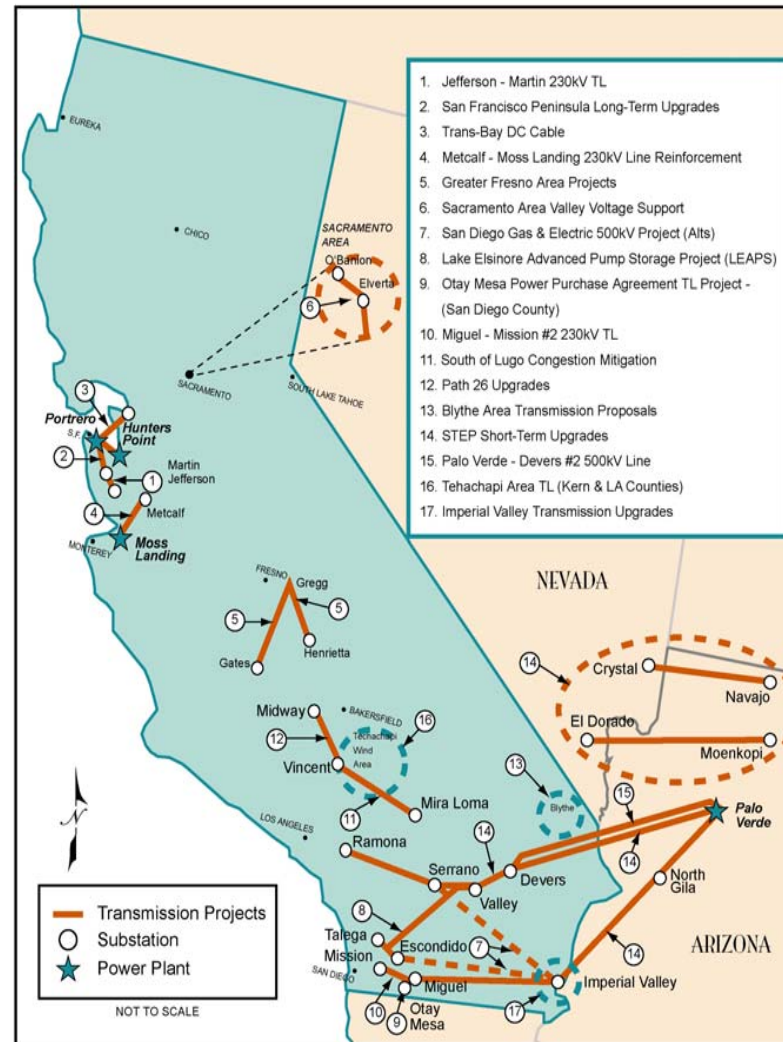


Chapter 3 and Appendix F: Transmission Problems and Project Update

- Review/status of four major transmission infrastructure issues
 - Local reliability
 - Congestion management
 - Renewable power delivery
 - Regional (out-of-state/interstate)
- Emerging transmission technologies
- Assessment of 21 major transmission projects
 - under study, planned, in permitting or under construction
- Staff suggestions for Strategic Plan near end of presentation



21 Projects (17 shown here)





Chapter 4: Transmission Corridor Planning and Development

- Staff developed a proposed state-led transmission corridor planning process
- The process includes three essential components:
 - Part 1: *An Energy Report* Corridor Identification Process
 - Part 2: Designation Authority and a Transmission Corridor Designation Process
 - Part 3: Land Acquisition and Banking



Chapter 5: Impact of Transmission on Renewables Development

- Operational challenges
 - Accommodating intermittent generation from wind and solar
 - Includes minimum load issues, scheduling and dispatch challenges
- System constraints
 - Lack of transmission in resource areas
 - Transmitting remote generation to load centers in an already-congested system



Chapter 6: Energy Commission Options for Further Action

- See Chapter 6 attached to your PowerPoint handout.



Next Steps: Staff Report

- Take feedback on guidance questions
 - Did the staff accurately capture parties' input to date?
 - Are there other relevant points?
 - Did staff draw appropriate conclusions?
 - Did staff identify appropriate policy options?
- Consider input received at today's hearing and by the comment deadline of August 4
- Publish an addendum in August 2005



Next Steps: Strategic Plan

- SB 1565 (Bowen) added PRC section 25324
 - Energy Commission shall adopt a strategic plan for the state's electric transmission grid
 - The plan shall identify and recommend actions required to implement investments needed to:
 - Ensure reliability
 - Relieve congestion
 - Meet future load growth in load and generation, including but not limited to: renewable resources, energy efficiency, and other demand reduction



Next Steps: Strategic Plan

- Take feedback on guidance questions
 - Do the projects presented in Chapter 3 and Appendix F of the staff report provide an appropriate foundation from which to develop the Strategic Plan?
 - Which of the projects in Chapter 3 and Appendix F should be considered for inclusion in the Strategic Plan, and why?
 - Are there other projects that should be considered?



Next Steps: Strategic Plan

- Staff's suggested criteria for inclusion of projects in the Strategic Plan
 - Near term (on-line date by 2010)
 - In need of siting approval
 - Meets the PRC section 25324 guidelines
 - Ensure reliability
 - Relieve congestion
 - Meet load growth/support renewable development
 - Consistent with 2003 and 2004 Energy Report recommendations (e.g., provides strategic benefits)



Projects for Consideration

- San Diego/Imperial Valley
 - San Diego 500 kV project (project #7)
 - Lake Elsinore Advanced Pumped Storage (project #8)
 - Imperial Valley Transmission Upgrades (project #17)
- Southern California/Tehachapi
 - South of Lugo Congestion Management (project #11)
 - Path 26 upgrades (project #12)
 - Palo Verde-Devers No. 2 (project #15)
 - Tehachapi segment #1 (part of project #16)
 - Tehachapi segment #2 (part of project #16)
- Northern California
 - Trans-Bay DC Cable project (project #3)
 - Metcalf-Moss Landing 230 kV Reinforcement (project #4)



Next Steps: Strategic Plan and *Energy Report*

- Committee Drafts: by September 8
- Hearings around the state: Late September
- Committee Finals: Mid-October
- Commission adoption: Early November

CHAPTER 6: ENERGY COMMISSION OPTIONS FOR FURTHER ACTION

The *2003 Energy Report* recommended that the Energy Commission implement a fully collaborative state transmission planning process and consolidate the permitting process for new bulk transmission lines within the Energy Commission. The Energy Commission concluded that current approaches have suffered from fragmented and overlapping jurisdictional responsibilities, inconsistent environmental analyses, and a general failure to recognize the regional and statewide benefits of transmission projects. The *2004 Energy Report Update* further stressed the immediate need for critical infrastructure investments in order to reap the benefits of further development of renewable resources.

Improvements in transmission system planning, transmission corridor planning, and addressing transmission issues associated with renewables integration are needed to ensure that California's transmission system is expanded in an environmentally responsible, cost effective manner that considers public input, enhances reliability, and meets strategic statewide objectives, including effective integration of renewable generation. The Energy Commission staff recommends that the following policy options be considered.

Transmission Planning – Next Steps

Given the high degree of interconnectedness of California's transmission system with its neighbors, it is essential that California plan its system in close coordination with them to ensure that California's interests are represented and considered. At the same time, the state should also plan for its own needs, recognizing the interconnectedness of the in-state investor-owned utility and public utility systems.

Regional Planning

In January 2005 the WECC and the Committee on Regional Electric Power Cooperation formed the WAG to identify the major commercial issues affecting the Western Interconnection and evaluate whether the West has the necessary industry and regulatory institutions to effectively address and resolve these issues. The April 2005 draft WAG white paper identified transmission expansion planning as one of four critical issues. Most of the participants at the May 23, 2005 stakeholder meeting expressed preference to investigate whether the WECC would be the most appropriate organization to address both reliability issues and newly identified major commercial issues.

- The Energy Commission is a member and active participant of the WECC. The Energy Commission's additional participation in the WAG initiative would ensure the state's interests are represented in this effort.

Statewide Planning

Recognizing the Energy Commission's interest in ensuring that long-term state objectives are met and the CA ISO's interest in ensuring that needed projects are identified and constructed in a timely manner, it is essential to recognize the strengths and expertise of each entity. Interactions between the Energy Commission's *Energy Report* work and the CA ISO's grid planning work could follow these principles:

- The LSEs would submit their load forecasts, resource plans, and price information to the *Energy Report* proceeding.
 - The Energy Commission could develop data requirements for future *Energy Report* proceedings in collaboration with the CA ISO and other parties to ensure that CA ISO information needs are met with respect to statewide transmission planning.
 - The Energy Commission could require that certain transmission planning information from transmission-owning load serving entities be provided annually so it could be used for developing staff forecasts and incorporated in grid planning by the CA ISO.
- The information would be analyzed and publicly reviewed in the *Energy Report* proceeding, resulting in adopted resource plans and scenarios.
 - The Energy Commission could develop formal agreements with transmission-owning load serving entities to ensure non investor-owned utility participation in the *Energy Report* transmission planning process.
 - The Energy Commission could work with the CA ISO and stakeholders to ensure that a disaggregated Energy Commission demand forecast is available for use in the CA ISO planning process during the next *Energy Report* cycle.
- Resource plans and scenarios, along with the municipal utility transmission plans, would be submitted to the CA ISO.
 - The Energy Commission could assist the CA ISO by providing publicly reviewed planning results for projects for inclusion in the California grid plan, including the identification of strategic benefits and consideration of comparative alternatives.
- The CA ISO would use that information -- along with the Energy Report load forecast information, participating transmission owner grid plans, and WECC plans -- to develop the California grid plan.
 - The Energy Commission could develop a Memorandum of Understanding with the CA ISO for a single electricity transmission planning process fully coordinating the individual processes and proceedings of the Energy Commission and the CA ISO, while recognizing the CA ISO as the transmission planning analysis entity for the state in preparing the California grid plan.

Transmission Corridor Planning – Next Steps

Corridor planning is essential to ensuring that California develops a healthy transmission system that will meet future electricity needs. Therefore, Energy Commission staff has developed, with input from stakeholders, a proposed state-led corridor planning process. This proposed process consists of the following three components:

- Part 1: An *Energy Report* Corridor Identification Process
 - Part 1 of the proposed process recommends collecting corridor information early in the *Energy Report* process. The Energy Commission could authorize staff to begin collecting corridor information so that adequate information is available.
 - Part 1 of the proposed process recommends developing collaborative Corridor Study Groups to review potential corridors. The Energy Commission could authorize staff to develop Corridor Study Groups in areas where a need has been identified.
- Part 2: Designation Authority and a Transmission Corridor Designation Process
 - The state should establish designation authority and a corridor designation process that sets land aside for future corridor use.
 - Future state corridors should be aligned with federally designated corridors when appropriate. The Energy Commission could authorize staff to work collaboratively with federal agencies, the public, local agencies, and other stakeholders to review the land uses along existing federally designated corridors and determine where complementary state designation would be beneficial.
- Part 3: Land Acquisition and Banking
 - Consistent with the *2004 Energy Report Update* recommendation for the development of a process to identify and bank utility corridors, the Energy Commission should encourage the CPUC to begin a proceeding on land banking to ensure that this issue moves forward. This corridor planning process can only be successful if the length of time IOU can keep land acquired for future needs in the rate base is extended beyond the current five-year limit.

The following additional corridor-related options complement staff's proposed state-led transmission corridor planning process described above. These options could serve as short-term alternatives to establish a foundation for future corridor planning efforts:

- Educating the general public about the fundamentals of the state's electrical grid and the need for additional transmission infrastructure would be beneficial. The Energy Commission could support development of a statewide education program, perhaps in coordination with the Public

Interest Environmental Research program's ongoing Planning Alternative Corridors for Transmission web-based modeling project.

- In the absence of state authority to designate transmission corridors, benefits could still be realized by identifying future corridors in areas where transmission infrastructure will be needed in the future. The Energy Commission could recommend in the Strategic Plan that utilities work with local agencies, stakeholders, and the public to identify a possible future corridor from the Imperial Valley into the San Diego region, a possible future corridor or corridors in the Tehachapi area that would complement projects already under consideration, and possible future corridors in other high priority areas.

Transmission and Renewables Development – Next Steps

Transmission infrastructure bottlenecks in California will greatly affect the state's ability to meet EAP RPS goals of 20 percent renewable generation by 2010.

- Federal and state policies pose significant barriers to meeting the RPS goals, especially those concerning rules for funding transmission system facilities.
 - The *2004 Energy Report Update* recommends investigating changes to the CA ISO tariff to encourage projects needed to commercialize renewable resources. To that end, SCE proposed the trunk line concept in an application to the FERC, and the Energy Commission and the CPUC supported that effort. However, on July 1, 2005, the FERC disapproved it. Additional analysis and coordination is needed to address this issue.
 - The Energy Commission could continue its collaboration with the CA ISO in developing mitigation of the negative cost effects that the FERC's marginal loss policy could have on siting renewable resources such as wind and geothermal. See Chapter 5 for additional information.
- From an operations perspective, integration of renewable generation into the grid offers major, inter-related challenges.
 - The Energy Commission could ensure that the operational integration work activities initially undertaken by staff continue through a collaborative effort.
 - To address the intermittent nature of wind resources and increase the effectiveness of existing energy storage facilities, the Energy Commission could promote coordination between system operators and storage owners. The Consortium for Electric Reliability Technology Solutions report notes, "...a more holistic strategy for the operation of all the pumped storage facilities in the state would yield a more efficient overall operation."¹
 - Because minimum load issues may be exacerbated by intermittent resources, the Energy Commission could assist in the identification of viable locations for storage facilities that would complement intermittent renewable resources.

- To reduce the uncertainty of resource availability, the Energy Commission could continue to promote research efforts to improve forecasts of intermittent resource availability. Reducing uncertainty in resource availability could reduce the need for costly reserve power that provides backup for intermittent renewable generators.
- Current transmission bottlenecks effectively limit the ability to transmit renewable generation from remote locations to major load centers.
 - The Energy Commission could continue to support the formation and implementation of stakeholder-based study groups to develop transmission plans allowing for the efficient movement of renewable energy to consumers.

¹ California Energy Commission, April 2005, *Assessment of Reliability and Operational Issues for Integration of Renewable Generation*, Consultant Draft Report, prepared by Electric Power Group, LLC, and Consortium for Electric Reliability Technology Solutions, CEC-700-2005-009-D, [http://www.energy.ca.gov/2005_energypolicy/documents/index.html#051005], p. 35.